



■ **Table 3-3: AM Peak - Hurstville Station Current Mode of Access**

Mode	Station Entries (6:00am to 9:30am)	% Mode Split
Car Park and Ride	1,193	19%
Car Kiss and Ride	1,444	23%
Bus	754	12%
Walking	2,763	44%
Other	126	1%
Total	6,280	100%

The data above suggests that walking is the primary station access and egress mode to Hurstville Railway Station and as a result, the future rail catchment at Hurstville would be greatly affected by the quality of pedestrian connectivity and accessibility to and from the railway station.

The NSW Transport and Infrastructure Metropolitan Transport Plan commits the NSW government to substantial transport investment in Sydney and of particular relevance to Hurstville City Centre includes the Western Express Project which is projected to increase rail network capacity, including capacity constraints at the Illawarra Line junction.

3.1.3. Existing and proposed bus services

Figure 3-5 shows the origin and number of bus services on major bus corridors to Hurstville City Centre. The AM figure displays the number of services during the AM peak period (defined as 6:00am to 9:00am), the PM figure indicates the number of services during the PM peak period (defined as 4:00pm to 7:00pm), and the daily figure indicates the total daily number of services.



■ Figure 3-5 Number of bus services on major corridors to and from Hurstville City Centre

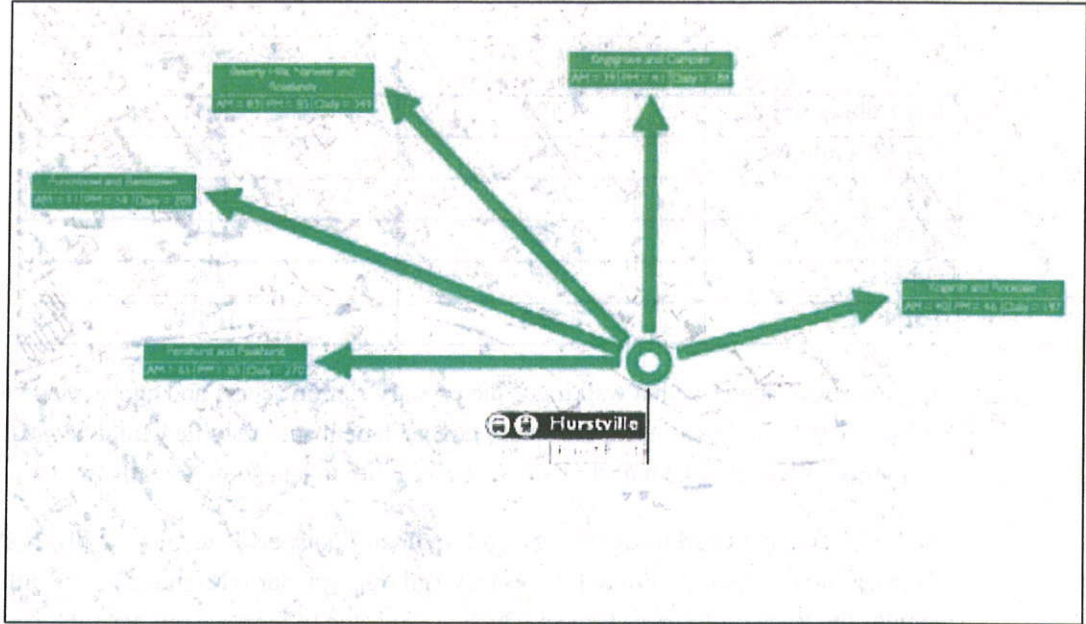


Table 3-4 provides a summary of bus services to Hurstville (Forest Road).



■ Table 3-4 Bus service summary

Route number	Origin / destination	Number of bus services to / from Hurstville in the AM peak (6-9)	AM peak average service frequency (inbound)	Number of bus services to / from Hurstville in the PM peak (4-7)	Number of bus services to / from Hurstville (per weekday)
450	Hurstville to Sydney Olympic Park	19	20 minutes	19	78
451	Hurstville to Campsie	16	20 minutes	16	68
452	Beverly Hills to Rockdale	16	20 minutes	17	71
453	Hurstville to Rockdale	0	Services to Hurstville operate in the off-peak	2	11
455	Kingsgrove to Rockdale Plaza	12	30 minutes	13	56
499	Hurstville to Drummoyne	11	35 minutes	12	60
940	Hurstville to Bankstown	20	20 minutes	21	75
941	Hurstville to Bankstown	12	25 minutes	12	57
943	Hurstville to Lugarno	14	20 minutes	11	61
947	Hurstville to Kogarah	12	30 minutes	14	59
948	Hurstville to Bankstown	19	20 minutes	21	77

There are a total of 151 bus services currently operating to and from the Hurstville City Centre during the AM peak period at frequencies of between 20 and 35 minutes (for inbound services). Most AM peak hour services operate at 15-30 minute headways.

To assess the adequacy of the existing bus network in serving these areas **Table 3-5** compares the existing bus corridors and the number of services on each corridor to the areas where a large proportion of trips to Hurstville City Centre originate.



■ Table 3-5: Bus corridor analysis

Origin of Trip to Hurstville (by SLA)	Suburbs within SLA	Proportion of Total Trips to Hurstville	Number of AM Peak Services (to and from Hurstville)
Hurstville	Hurstville, Penshurst, Peakhurst, Beverly Hills, Riverwood, Mortdale	22.83%	151 (all routes to and from Hurstville – Forest Road)
Kogarah	Kogarah, South Hurstville, Hurstville Grove, Connells Point, Oatley	14.22%	24 (routes 455, 947)*
Rockdale	Rockdale, Kogarah, Carlton, Bexley North, Wolli Creek, Brighton-le-Sands, Ramsgate, Dolls Point, Sans Souci	10.5%	28 (routes 452, 453, 455)*
Sutherland Shire - West	Sutherland, Engadine, Waterfall, Menai, Illawong, Como, Oyster Bay	10.11%	Travel to Hurstville by other modes
Sutherland Shire - East	Miranda, Caringbah, Sylvania, Gymea, Cronulla, Woolooware	7.14%	Bus services are provided on the southern side of Hurstville station on Ormonde Parade
Canterbury	Canterbury, Kingsgrove, Campsie, Roselands, Lakemba, Earlwood, Punchbowl	6.54%	90 (routes 450, 451, 455, 499, 940, 941)
Bankstown - South	Milperra, East Hills, Panania, Revesby, Padstow	3.34%	19 (route 948). Majority of bus services converge at Bankstown
Bankstown – North-East	Bankstown, Chullora, Punchbowl	1.59%	51 (routes 940, 941, 948)
Liverpool - East	Liverpool, Wattle Grove, Moorebank, Ashcroft, Warwick Farm, Casula	1.57%	Bus services converge at Liverpool. Travel to Hurstville by other modes
Randwick	Randwick, Coogee, Kingsford, Kensington, Maroubra, Matraville, Port Botany, Clovelly, Centennial Park	1.53%	Bus services converge at Bondi Junction and Sydney CBD. Travel to Hurstville by other modes
Marrickville	Marrickville, Dulwich Hill, Lewisham, Petersham, Tempe, Sydenham, St Peters, Stanmore, Newtown, Enmore	1.27%	Bus services converge at Sydney CBD. Travel to Hurstville by other modes
Wollongong Bal	Figtree, Unanderra, Port Kembla, Berkeley, Dapto, Otford, Stanwell Park, Helensburgh	1.20%	Travel to Hurstville by other modes
Wollongong - Inner	Wollongong, Coniston, Corrimal, Austinmer, Thirroul	1.12%	Travel to Hurstville by other modes

* Route 958 also services Kogarah and Rockdale, however this service departs from the southern side of Hurstville station on Ormonde Parade



Table 3-5 shows that almost 25% of JTW trips into Hurstville City Centre are from Kogarah SLA and Rockdale SLA and the average bus frequency serving this corridor (routes 455, 947, 453 and 455) during AM peak is 30 minutes. There is an opportunity to further investigate increasing bus frequency along the Kogarah, Rockdale and Hurstville Corridor.

It should be noted that the NSW Government has already proposed a number of changes across the bus network including Rockdale, Kogarah and Miranda bus services. The proposed changes would impact on route 422, 425, 474, 475 and 478. In addition, the Hurstville City Council in conjunction with the NSW Ministry of Transport (MoT) is planning to design and construct a purpose built Bus Interchange on the site of Woodville Lane, in close proximity to Hurstville Railway Station. The proposed location of the bus interchange would consolidate bus stops within one area resulting in a safer and convenient environment for commuters, bus operators and other road users.

The NSW Transport and Infrastructure Metropolitan Transport Plan commits the NSW government to substantial transport investment in Sydney and of particular relevance to Hurstville City Centre includes access to one thousand new buses to the Sydney's bus network (an increase of 25%) together with the completion of 43 strategic bus corridors and various initiatives to improve customer experience and further encourage public transport use. Additional funds are being allocated to bus priority, some of which will benefit Hurstville.

3.2. Road Network Impacts of Amended Masterplan

SKM have previously developed Paramics traffic models for the 2009 AM and PM peak for Hurstville City Centre, to reflect existing traffic conditions in the study area. Two models were developed, an AM Peak model from 06:30-08:30 and a PM Peak model from 16:30-18:30. The models were then calibrated and validated to ensure that current traffic conditions in the Hurstville area were adequately reflected.

The existing Paramics model for Hurstville City Centre is illustrated in Error! Reference source not found..

■ **Figure 3-6: Hurstville City – Paramics Model**



3.2.1. Road Network Assessment Results

These 2009 models were used to assess the impact of the proposed Masterplan on the existing road network. The current AM and PM peak hour trip generation rates and the corresponding land-uses were assessed in the study area. These trip generation rates were then applied to the proposed land-uses in the study area.

The existing AM peak trip rates and the revised trip rates for the Masterplan are detailed in Table 3-6. The trip generation rates show a 300% increase in commercial trip rates, a 250% increase in retail trip rates and a 139% increase in residential trip rates in the study area. This equates to an overall growth in trips to and from Hurstville City Centre of 240% in the AM peak hour. It should be noted that no future year models were prepared and hence no “future-background” traffic was included in the assessment. Typically this would be in the order of 2-3% per annum over a 20 year period and can be a significant proportion of overall traffic. Thus the traffic impacts presented in the remainder of the report are considered to be very conservative.



■ **Table 3-6 AM Peak: Masterplan Land-use and Peak Hourly Trip Generation Rates**

Land-Use	Current (Trips)	Masterplan (Trips)	Increase (Trips)	% Increase
Residential	968	1350	382	139%
Commercial	1582	4712	3130	298%
Retail	395	991	596	251%
Total	2945	7053	4108	239%

The existing PM peak trip rates and the revised trip rates for the Masterplan are detailed in **Table 3-7**. The trip generation rates show a 280% increase in commercial trip rates, a 220% increase in retail trip rates and a 133% increase in residential trip rates in the study area. This equates to an overall growth in trips to and from Hurstville City Centre of 230% in the PM peak hour.

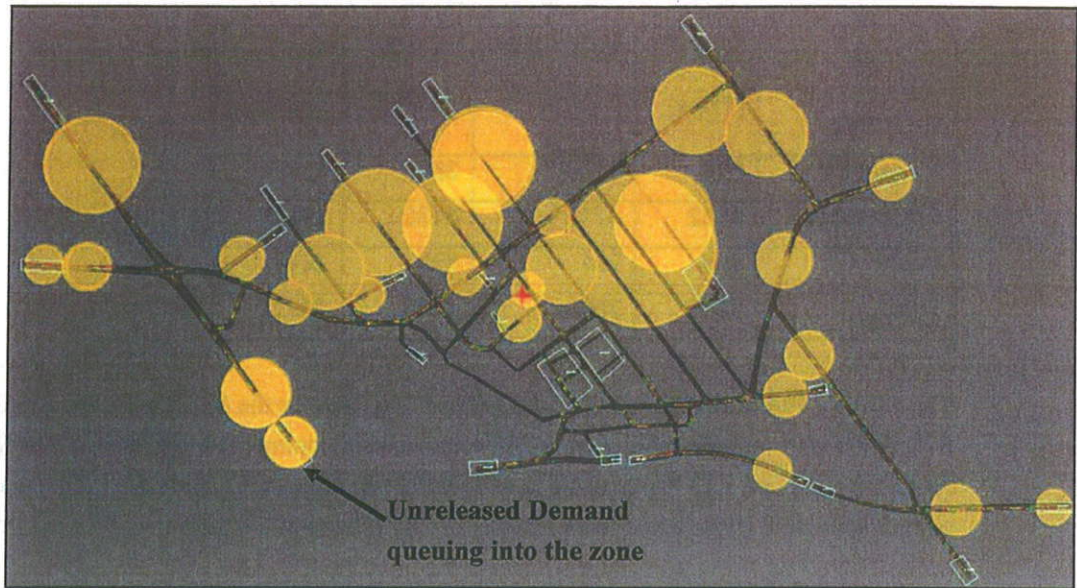
■ **Table 3-7 PM Peak: Masterplan Land-use and Peak Hourly Trip Generation Rates**

Land-Use	Current (Trips)	Masterplan (Trips)	Increase (Trips)	% Increase
Residential	522	696	174	133%
Commercial	1635	4523	2887	277%
Retail	1826	4002	2176	219%
Total	3983	9221	5237	231%

The Paramics models were updated to include the additional trips attracted and generated by the proposed developments as described in the Masterplan and detailed in and . The Paramics models were run and the results were extracted to assess the impact of the proposed development. There was significant queuing observed in the model runs for the AM and PM peak with the Masterplan land uses, the AM peak queues are shown in **Figure 3-7**.



■ **Figure 3-7 AM Peak Model incorporating Masterplan Trip Generation**



The demand released is a network performance indicator. In the modelled network, at a zone location where vehicles load onto the network, there may be congestion which results in vehicles queuing into the zone (as highlighted in), these queued vehicles are not observed in the model and are referred to as unreleased demand. The RTA standards for micro-simulation modelling require that a 97% demand release be achieved before individual intersections can be assessed.

The demand release data was extracted for the Paramics model runs. This demand release data is detailed in **Table 3-8**. The models incorporating the Masterplan trip generation rates do not achieve an acceptable demand release, with 18% or 3,000 trips unable to be accommodated in the AM peak and 2,400 or 11.5% in the PM peak.

■ **Table 3-8 Demand Release results**

Scenario	AM Peak			PM Peak		
	Total Demand	Unreleased Demand		Total Demand	Unreleased Demand	
		(Vehicles)	%		(Vehicles)	%
Base	13058	0	0%	14438	0	0
Full Masterplan	17052	3054	18%	21051	2430	11.5%

The network statistics were also extracted and compared to the 2009 base model. The network statistic of Vehicle Kilometres Travelled (VKT) and Vehicle Hours Travelled (VHT) (or more specifically changes in VKT and VHT) are commonly used measures of network performance. A

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